

RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

SSD40N10J is designed to stand high energy in the avalanche mode and switch efficiently. It also offers a drain-to-source diode fast recovery time. It is designed for high voltage, high speed switching applications such as power supplies, converters, power motor controls and bridge circuits.

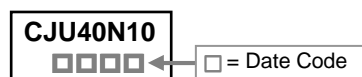
FEATURES

- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}

APPLICATIONS

- Power switching applications
- Hard switched and high frequency circuits
- Uninterruptible power supply

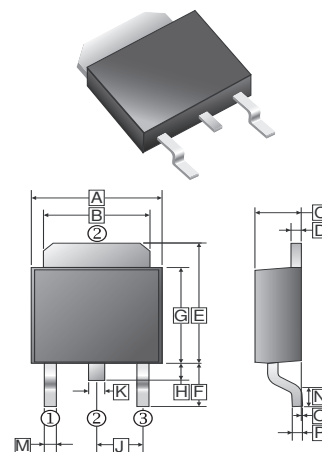
MARKING



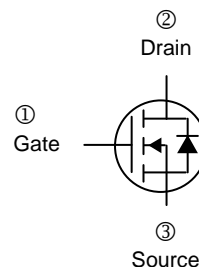
PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

TO-252(D-Pack)



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.35	6.90	J	2.186	2.386
B	4.95	5.50	K	0.64	1.14
C	2.10	2.50	M	0.50	1.14
D	0.43	0.9	N	1.3	1.8
E	6.0	7.5	O	0	0.13
F	2.90	REF.	P	0.58	REF.
G	5.40	6.40			
H	0.60	1.20			



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	40	A
Pulsed Drain Current	I_{DM}	160	A
Single Pulsed Avalanche Energy ¹	E_{AS}	320	mJ
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	$^\circ\text{C} / \text{W}$
Lead Temperature for Soldering Purposes @ 1/8" from case for 10s	T_L	260	$^\circ\text{C}$
Junction and Storage Temperature Range	T_J, T_{STG}	150, -55~150	$^\circ\text{C}$

Notes:

1. E_{AS} condition: $V_{DD}=50\text{V}$, $L=0.5\text{mH}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	100	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	$V_{DS}=100\text{V}, V_{GS}=0$
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$
On Characteristics ¹						
Gate-Threshold Voltage	$V_{GS(th)}$	2	-	4	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	14	17	m Ω	$V_{GS}=10\text{V}, I_D=28\text{A}$
Forward Transconductance	g_{fs}	32	-	-	S	$V_{DS}=25\text{V}, I_D=28\text{A}$
Dynamic Characteristics						
Input Capacitance	C_{iss}	-	3400	-	pF	$V_{DS}=30\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$
Output Capacitance	C_{oss}	-	290	-		
Reverse Transfer Capacitance	C_{rss}	-	221	-		
Switching Characteristics						
Total Gate Charge	Q_g	-	94	-	nC	$V_{DS}=30\text{V}$ $V_{GS}=10\text{V}$ $I_D=30\text{A}$
Gate-Source Charge	Q_{gs}	-	16	-		
Gate-Drain ("Miller") Charge	Q_{gd}	-	24	-		
Turn-on Delay Time	$T_{d(on)}$	-	15	-	nS	$V_{DD}=30\text{V}$ $V_{GS}=10\text{V}$ $R_G=2.5\Omega$ $R_L=15\Omega$ $I_D=2\text{A}$
Rise Time	T_r	-	11	-		
Turn-off Delay Time	$T_{d(off)}$	-	52	-		
Fall Time	T_f	-	13	-		
Source-Drain Diode Characteristics						
Diode Forward Voltage ¹	V_{SD}	-	-	1.2	V	$I_S=28\text{A}, V_{GS}=0$
Continuous Source Current	I_S	-	-	40	A	
Pulsed Source Current	I_{SM}	-	-	160	A	

Notes:

1. Pulse Test : Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

CHARACTERISTIC CURVE

